

### IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A data processing method for a data processing system comprising a messaging service and a transaction service, the method comprising ~~the steps of:~~  
receiving a request, from a sender, to send an asynchronous message, comprising message data, to a queue, wherein the request is received under the scope of a transaction;  
registering a definition for the queue, the definition providing details of an operation provided by a [[the]] recipient;  
processing the request to send the [[a]] asynchronous message by delivering the asynchronous message, prior to completion of the transaction, to the [[a]] recipient which is registered with the messaging service to process messages from the queue wherein the asynchronous message is delivered to the recipient by calling the operation and including details of the asynchronous message;  
receiving one or more requests to register involvement of one or more participants in the transaction, wherein each participant represents transactional work done as a result of the recipient processing the asynchronous message; and  
completing the transaction wherein the completing the transaction [[step]] comprises instructing each of the one or more participants to complete; whereby transactional work done, as a result of the recipient processing the asynchronous message, is involved in the transaction under the scope of which the asynchronous message was sent.
2. (Original) A method as claimed in claim 1 wherein one of the one or more requests to register involvement of one or more participants in the transaction, registers involvement of the recipient as a participant in the transaction.
3. (Currently Amended) A method as claimed in claim 2 wherein the one of the one or more requests to register the involvement of the recipient as a participant in the

transaction includes details of the queue, wherein the completing the transaction comprises instructing ~~step instructs~~ the recipient to complete by sending one or more messages to the queue.

4. (Currently Amended) A method as claimed in claim 2 wherein the request to register the involvement of the recipient as a participant in the transaction includes details of a second queue to the transaction wherein the completing the transaction comprises instructing ~~completion step instructs~~ the recipient to complete by sending one or more messages to the second queue.

5. (Currently Amended) A method as claimed in claim 1 wherein the transaction is a first transaction and the method further comprises ~~the further step of:~~

processing the asynchronous message by the recipient; wherein the ~~step of~~ processing of the asynchronous message by the recipient comprises ~~the steps of:~~ informing a second transaction of the first transaction, details of which were included with the asynchronous message; and calling a second recipient and, as part of ~~the calling~~ the second recipient, ~~step~~ passing the asynchronous message data to the second recipient for processing under the scope of the second transaction.

6. (Currently Amended) A method as claimed in claim 5 wherein the processing of the asynchronous message by the recipient comprises ~~the further step of:~~ starting the second transaction.<sub>[[;]]</sub>

7. (Currently Amended) A method as claimed in claim 5 wherein the processing of the asynchronous message by the recipient comprises ~~the further steps of:~~ prior to calling the second recipient, registering as a temporary participant in the second transaction; and on return from calling the second recipient, unregistering as a temporary participant in the second transaction.

8. (Currently Amended) A method as claimed in claim 7 wherein as part of the unregistering ~~step~~ a vote is passed to the second transaction, the vote comprising an indication as to whether the second transaction should commit or rollback.

9. (Currently Amended) A method as claimed in claim 8 further comprising ~~the further step of~~:

in response to the unregistering ~~step~~ including a vote comprising an indication that the second transaction should rollback, marking the second transaction as rollback only.

10. (Currently Amended) A method as claimed in claim 5 wherein the second transaction acts as a subordinate transaction to the transaction, details of which were included with the asynchronous message.

11. (Currently Amended) A method according to claim 5 wherein the second transaction acts as a nested transaction within the transaction, details of which were included with the asynchronous message.

12. (Currently Amended) A method as claimed in claim 8 wherein the second transaction acts as a nested transaction within the transaction, details of which were included with the asynchronous message and the method further comprises ~~further the steps of~~:

in response to the unregistering ~~step~~ including a vote comprising an indication that the second transaction should rollback: rolling back the second transaction; and restoring the asynchronous message to the queue.

13. (Currently Amended) A data processing system comprising a messaging service and a transaction service, the system comprising:

means for the messaging service to receive a request, from a sender, to send an asynchronous message comprising message data to a queue, wherein the request is received under the scope of a transaction;

means for registering a definition for the queue, the definition providing details of an operation provided by a a ~~[[the]]~~ recipient;

means for the messaging service to process the request to send an asynchronous message by delivering the asynchronous message, prior to completion of the transaction, to

the [[a]] recipient which is registered with the messaging service to process messages from the queue wherein the asynchronous message is delivered to the recipient by calling the operation and including details of the asynchronous message;

means for the transaction service to receive a request to register involvement of a participant in the transaction, wherein the participant represents transactional work done as a result of the recipient processing the asynchronous message; and  
means for the transaction service to complete the transaction comprising instructing each participant in the transaction to complete; whereby transactional work done, as a result of the recipient processing the asynchronous message, is involved in the transaction under the scope of which the asynchronous message was sent.

14. (Original) A data processing system as claimed in claim 13 wherein the means for receiving a request to register involvement of a participant in the transaction receives a request to register involvement of the recipient as a participant in the transaction.
15. (Currently Amended) A data processing system as claimed in claim 14 wherein the request received to register the involvement of the recipient in the transaction includes details of the queue, wherein the means for the transaction service to complete the transaction ~~completing the transaction~~ instructs the recipient to complete by sending one or more messages to the queue.
16. (Currently Amended) A data processing system as claimed in claim 14 wherein the request received to register the involvement of the recipient in the transaction includes details of a second queue, wherein the means for ~~completing the transaction~~ service to complete the transaction instructs the recipient to complete by sending one or more messages to the second queue.
17. (Currently Amended) A data processing system as claimed in claim 13 wherein the recipient comprises:

means for informing a second transaction of the transaction, details of which were included with the asynchronous message; and

means for calling a second recipient and, as part of the calling the second recipient, ~~step~~ passing the asynchronous message data to the second recipient for processing under the scope of the second transaction.

18. (Original) A data processing system as claimed in claim 17 wherein the recipient further comprises:

means for starting the second transaction;

19. (Original) A data processing system as claimed in claim 17 wherein the recipient further comprises:

means for registering as a temporary participant in the second transaction, prior to calling the second recipient; and

means for unregistering as a temporary participant in the second transaction, on return from calling the second recipient.

20. (Original) A data processing system as claimed in claim 19 wherein the means for unregistering passes a vote to the second transaction, the vote comprising an indication as to whether the second transaction should commit or rollback.

21. (Currently Amended) A data processing system as claimed in claim 20 further comprising:

means, responsive to the means for unregistering ~~step~~ passing a vote comprising an indication that the second transaction should rollback, for marking the second transaction as rollback only.

22. (Currently Amended) A data processing system as claimed in claim 17 wherein the second transaction acts as a subordinate transaction to the transaction, details of which were included with the asynchronous message.

23. (Currently Amended) A data processing system as claimed in claim 17 wherein the second transaction acts as a nested transaction within the transaction, details of which were included with the asynchronous message.

24. (Currently Amended) A data processing system as claimed in claim 20 wherein the second transaction acts as a nested transaction within the transaction, details of which were included with the asynchronous message and the messaging system further comprises:

means, responsive to the means for unregistering ~~step~~ including a vote comprising an indication that the second transaction should rollback, for~~[[:]]~~ rolling back the second transaction; and

means for restoring the asynchronous message to the queue.

25. (Currently Amended) A computer program product comprising instructions encoded in a computer readable medium, which, when executed on a data processing host, cause the host to perform operations that comprise:

receiving a request, from a sender, to send an asynchronous message, comprising message data, to a queue, wherein the request is received under the scope of a transaction;

means for registering a definition for the queue, the definition providing details of an operation provided by a ~~[[the]]~~ recipient;

processing the request to send an asynchronous message by delivering the asynchronous message, prior to completion of the transaction, to the ~~[[a]]~~ recipient which is registered with the messaging service to process messages from the queue wherein the asynchronous message is delivered to the recipient by calling the operation and including details of the asynchronous message;

receiving one or more requests to register involvement of one or more participants in the transaction, wherein each participant represents transactional work done as a result of the recipient processing the asynchronous message; and completing the transaction wherein the completing the transaction [[step]] comprises instructing each of the one or more participants to complete; whereby transactional work done, as a result of the recipient processing the asynchronous message, is involved in the transaction under the scope of which the asynchronous message was sent.

26. (Original) A computer program product as claimed in claim 25 wherein one of the one or more requests to register involvement of one or more participants in the transaction, registers involvement of the recipient as a participant in the transaction.
27. (Currently Amended) A computer program product as claimed in claim 26 wherein the request to register the involvement of the recipient as a participant in the transaction includes details of the queue, wherein the completing the transaction comprises instructing ~~completing step instructs~~ the recipient to complete by sending one or more messages to the queue.
28. (Currently Amended) A computer program product as claimed in claim 26 wherein the request to register the involvement of the recipient as a participant in the transaction includes details of a second queue to the transaction wherein the completing the transaction comprises instructing ~~completion step instructs~~ the recipient to complete by sending one or more messages to the second queue.
29. (Currently Amended) A computer program product as claimed in claim 25 wherein the transaction is a first transaction and the operations further comprise :  
  
processing the asynchronous message by the recipient;  
wherein the ~~step of~~ processing of the asynchronous message by the recipient comprises ~~the steps of:~~ informing a second transaction of the first transaction, details of which were included with the asynchronous message; and

calling a second recipient and as part of the calling ~~step~~ passing the message data to the second recipient for processing under the scope of the second transaction.

30. (Currently Amended) A computer program product as claimed in claim 29 wherein the processing of the asynchronous message by the recipient comprises the further operation of:

starting the second transaction;

31. (Currently Amended) A computer program product as claimed in claim 29 wherein the processing of the asynchronous message by the recipient comprises the further operations of:

prior to calling the second recipient, registering as a temporary participant in the second transaction; and

on return from calling the second recipient, unregistering as a temporary participant in the second transaction.

32. (Currently Amended) A computer program product as claimed in claim 31 wherein as part of the operation of unregistering as a temporary participant in the second transaction ~~operation~~ a vote is passed to the second transaction, the vote comprising an indication as to whether the second transaction should commit or rollback.

33. (Currently Amended) A computer program product as claimed in claim 32, wherein the operations further comprise :

in response to the operation of unregistering as a temporary participant in the second transaction ~~operation step~~ including a vote comprising an indication that the second transaction should rollback, marking the second transaction as rollback only.



- 
34. (Currently Amended) A computer program product as claimed in claim 29 wherein the second transaction acts as a subordinate transaction to the transaction, details of which were included with the asynchronous message.
35. (Currently Amended) A computer program product according to claim 29 wherein the second transaction acts as a nested transaction within the transaction, details of which were included with the asynchronous message.
36. (Currently Amended) A computer program product as claimed in claim 32 wherein the second transaction acts as a nested transaction within the transaction, details of which were included with the asynchronous message and the operations method further comprises ~~further the steps of:~~

in response to the unregistering ~~step~~ including a vote comprising an indication that the second transaction should rollback: rolling back the second transaction; and restoring the asynchronous message to the queue.